

A NEW BUTTERFLY SPECIES OF THE GENUS *YPTHIMA* HUBNER  
(NYMPHALIDAE: SATYRINAE) FROM GARHWAL HIMALAYA, INDIA<sup>1</sup>

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The *sakra* species group under the genus *Ypthima* Hubner is represented by two species, *Y. sakra* and *Y. nikaia*, in the western Himalaya. During a survey of the Kedarnath Musk Deer Reserve (KMDR), Uttarakhand, India, a new species, *Y. kedarnathensis* sp. nov. belonging to this group was discovered, which is described in this paper.

**Key words:** *Ypthima sakra*, *Y. nikaia*, *Y. kedarnathensis* sp. nov., wing pattern, ocelli

### INTRODUCTION

The Himalayan Five Ring *Ypthima nikaia* Moore (1874) is a species known from western Himalaya and Nepal with both the sexes having similar wing pattern (D' Abrera 1985; Smith 1989; Haribal 1992). Previously, *Y. nikaia* was treated as one of the three subspecies of *Y. sakra* found in India. The other two subspecies are *Y.s. sakra* Moore, which is more common in eastern Himalaya than in the western Himalaya, where its distribution extends up to Kullu in Himachal Pradesh, and *Y.s. ansteni* Moore, which is restricted to north-east India (Assam) and Burma (now Myanmar) (Evans 1932; D' Abrera 1985).

During field surveys (2006-2007) of butterflies in the south-eastern part of Kedarnath Musk Deer Reserve (KMDR), in the Garhwal Himalaya, Uttarakhand, India, 18 specimens of the sub-group *nikaia* were collected and two live specimens examined around the Mandal village (30° 27'-30° 28' N and 79° 15'-79° 16' E lying 10 km west from Gopeshwar town of Chamoli district). Out of these, five specimens (three collected and two live individuals examined were from two different locations 10 km apart), revealed uniform variation in wing pattern with respect to *Y. nikaia* and are described as a new species, *Ypthima kedarnathensis* sp. nov. The remaining fourteen specimens belonged to *Y. nikaia* and were distinct from the new species. *Y. sakra* was not represented in the collections from this area. The new species is described here based on wing pattern and its distinguishing features.

### Systematic Account

**Genus:** *Ypthima* Hubner

**Common name:** The Rings

*Ypthima* Hubner 1818, Zutr.z.samm.l.exot.Schmett, 1;17.

### Diagnostic characters for genus *Ypthima*

Small sized butterflies with ocelli on fore and hind wings.

Forewing has a large prominent two-pupilled ocellus located just below the apex in space 5 and at least an ocellus in space 2 on the upper hind wing (Fig. 1). Hind wing has varying number of rings on the outer discal area, which form the basis for identification of this genus. They also have striations and band on the underside of the wings. Some have seasonal forms; in dry season forms the ocelli are reduced to spots (Wynter-Blyth 1957; Haribal 1992). Forewing lower discocellular vein (between the origins of v6 and v4) (Fig. 1) is straight or concave; v10 always arising from v7 (Fig. 1) (Evans 1932).

### Description

*Ypthima kedarnathensis* sp. nov.

**Wing pattern (male; wsf)**

**Wing span:** 44-45 mm.

**Upper side:** Dark brown with thorax dorsally studded with reddish hairs which extend to basal area of forewing;

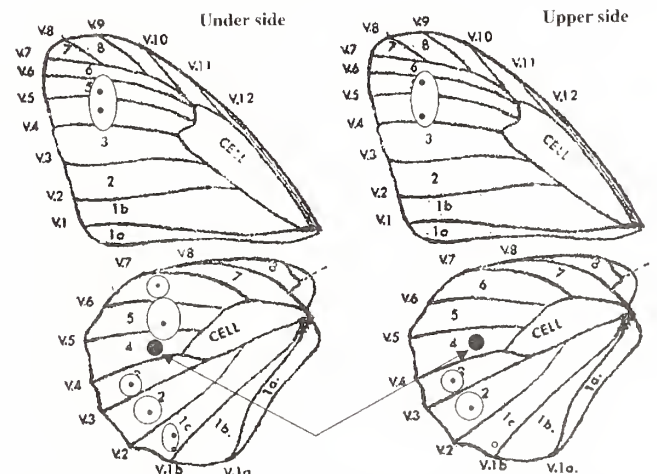


Fig. 1: Wing pattern of wet season form of *Ypthima kedarnathensis* sp. nov., (Holotype) showing the position of ocelli on the wings. The arrow depicts the position of an additional apical ocelli in this species in relation to *Y. nikaia*, which is visible on both upper and under sides of the hind wing between veins 4 and veins 5 in this species

Table 1: Distinguishing features in wing pattern between *Ypthima sakra*, *Y. nikaea* and *Y. kedarnathensis* sp. nov.

Sl. No.	Character	<i>Y. sakra</i>	<i>Y. nikaea</i>	<i>Y. kedarnathensis</i> sp. nov.
A.	Wing span	48-55 mm	45-52 mm	44-45 mm
B.	Upper side			Dark brown
1.	Wing colour	Umber brown, terminal margins of the wing darker	Dark brown	Dark brown
2.	Forewing	Sub-apical ocellus large, oval bi-pupilled very slightly oblique	Sub-apical ocellus smaller than in <i>Y. sakra</i> , oval bi-pupilled	Sub-apical ocellus smaller than in <i>Y. sakra</i> , oval bi-pupilled
3.	Hindwing	Four similar unipupilled round ocelli present, the pre-apical and tornal ocelli are frequently absent or faintly marked, the last when present always minute. [The pre-apical ocellus when present is on space 5 (between v5 and v6)].	Two sub-anal ocelli (male sometimes has one). The pre-apical and tornal ocelli are frequently absent or faintly marked, the last when present always minute. The pre-apical ocellus when present is on space 5 (between v5 and v6)	Four similar unipupilled round ocelli present. The pre-apical ocellus is faintly or sharply marked but always present on space 4 (between v4 and v5). The tornal ocelli are frequently absent or faintly marked, when present is always minute
C.	Underside			Yellowish with numerous short brown strigae
1.	Wing colour and pattern	Under side yellow to ochraceous brown, thickly irrorated by transverse, short dark brown strigae	Grey with numerous short brown strigae	Yellowish with numerous short brown strigae
2.	Forewing	The encircling yellow ring of the pre-apical ocellus is broader. Sometimes a second very much smaller, obscure median ocellus is present	The encircling yellow ring of the pre-apical ocellus is sharply defined	The encircling yellow ring of the pre-apical ocellus is sharply defined.
3.	Hindwing	5 ocelli; 2 pre-apical ocelli large, geminate, encircled in a common yellow ring (do not have an intervening yellow band between them). The posterior 3 ocelli are in echelon with the 2 apical ocelli, with distinct ridges, the tornal ocellus bi-pupilled	5 ocelli; 2 apical ocelli large and have an intervening yellow band between them. The posterior 3 ocelli are arranged in a linear series from anal angle, the tornal ocellus bi-pupilled	5+1 = 6 ocelli; 3 apical ocelli present and their pupils form a 135 degree angle directed towards the 'apex'; all the three apical ocelli have an intervening yellow band between them. None of the 3 apical ocellus is larger than the other three posterior ocelli. However, the middle apical ocellus is larger than the other two apical ocelli (which are reduced) and is as big as the middle ocellus of the three posterior ocelli. The 3 posterior ocelli are arranged in a linear series from anal angle, the tornal ocellus is bi-pupilled

pupils of ocelli silvery blue. Forewing with an oval sub-apical bi-pupilled black ocellus which is yellow ringed with sharply defined edges.

Hind wing is with two prominent ocelli in space 2 and 3 between v2 and v4 and an additional very minute and faintly marked third ocellus in 1c (Fig. 1). An additional fourth sub-apical ocellus is present in space 4 between v4 and v5 (Fig. 1), and is visible also on the lowerside of hind wing at the same location.

**Under side:** Bright yellow with numerous short brown narrow strigae (quite similar to *Y. nikaia*). Forewing has an oval sub-apical bi-pupilled black ocelli, same in size as in *Y. nikaia* and smaller than in *Y. sakra*. Hind wing with 6 prominent ocelli. Location and size of 5th ocelli is similar to those in *Y. nikaia*, but differs in the presence of an additional small ocelli attached below the double apical ocelli [in space 4 between v4 and v5 (Fig. 1)]. All the three apical ocelli are connected together but have an intervening yellow band which is a common characteristic of *Y. nikaia*. The pupils of all the 3 apical ocelli form a 135 degree angle directed towards the 'apex'. The other three posterior ocelli are in a linear series from anal angle, the tornal/anal one being bi-pupilled.

The differences between the wing pattern of *Y. kedarnathensis* sp. nov., *Y. nikaia* and *Y. sakra* are given in Fig. 2 and discussed in Table 1. The wing pattern of *Y. sakra* and *Y. nikaia* described here are based on published literature (Moore 1874, 1893-1896; Marshall and deNiceville 1882; Bingham 1905; Evans 1932; Wynter-Blyth 1957; D'Abbrera 1985; Smith 1989 and Haribal 1992).

#### MATERIAL EXAMINED

**Holotype:** Male, INDIA: Uttarakhand, KMDR, Mandal, 1,700 m above msl, 25.vii.2006. Coll. Arun P. Singh, Type material in 'National Forest Insect Collection', Entomology Division, Forest Research Institute, Dehradun, Uttarakhand, India; under Accession No. NFIC-FRI-21,800.

**Paratypes:** Uttarakhand: Mandal village (1,600-1,800 m): 1 male, 26.ix.2006-29.ix.2006 and 1 male 4.x.2007; Coll. Arun P. Singh; wingspan: 44-45-mm. Type material in 'National Forest Insect Collection', Entomology Division, Forest Research Institute, Dehradun, Uttarakhand, India; under Accession No. NFIC-FRI-21,800.

**Etymology:** The species is named after its type locality – Kedarnath Musk Deer Reserve where Mt. Kedarnath (6,838 m), the highest peak in the area, is situated in this Reserve.

#### Habits and Habitat

The species was recorded from KMDR on three

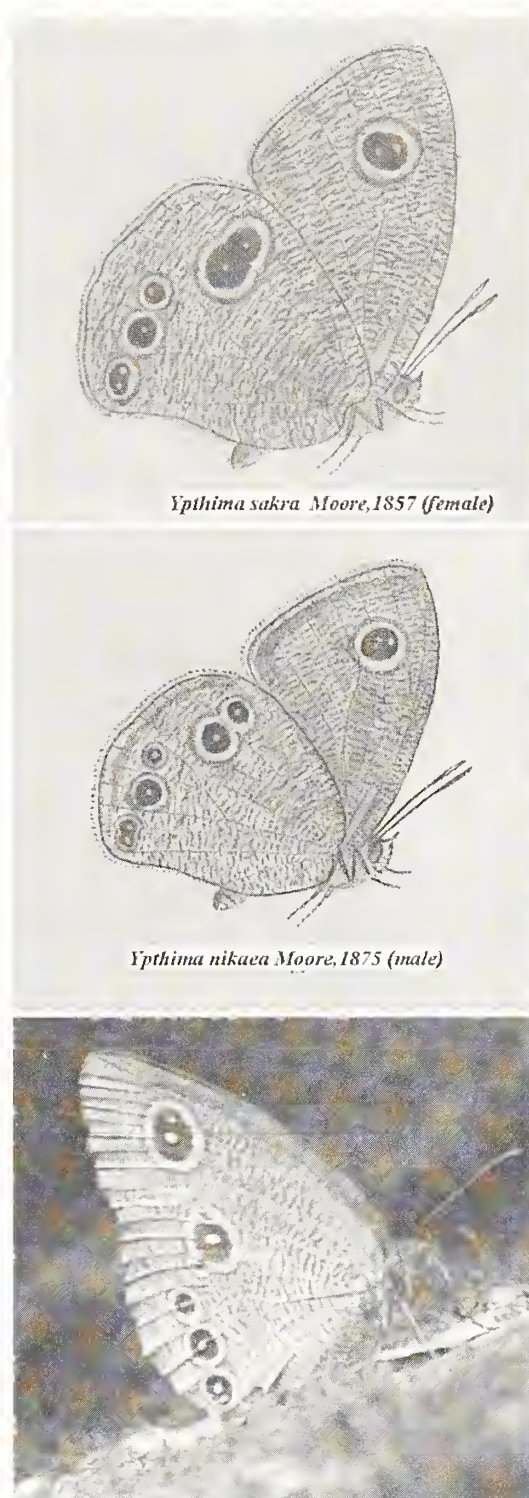


Fig. 2: Under side wing patterns of *Ypthima sakra*, *Y. nikaia* and *Y. kedarnathensis* sp. nov., depicting variation in shape, structure and location of apical ocelli on hind wing

occasions July 26-29, 2006, September 26-29, 2006 and October 3-8, 2007. It was not represented in the collections during the winter survey (November 2006 - December 2, 2006) when it



was probably hibernating. During the wet season individuals were observed flying low, close to the ground near the forest edge and in openings inside mixed tree stands of sub-tropical and moist temperate vegetation dominated by *Quercus leucotrichophora* and *Rhododendron arboreum* between 1,600-1,800 m.

#### Relative Abundance

As many as five individuals of *Y. kedarnathensis* sp. nov. were identified from a total of 18 individuals of the *sakra* species group examined in the area. This species was relatively uncommon in relation to *Y. nikaia* found in the area.

#### DISCUSSION

The new species described is closely allied to *Y. nikaia* but differs from it mainly in the presence of an additional third apical ocellus between v4 and v5 on the hind wing, which is also visible on the upper side of hind wing at the same location. The presence of the third apical ocellus has not been reported, so far, from anywhere in the Himalaya. Even the recent butterfly

surveys conducted in Garhwal and Kumaon (Rose and Sharma 1998) did not reveal the presence of such an apical ocellus in the hind wing in any of the species of *Ypthima*. These specimens collected from two different locations represent a new species. As a total of six distinct ocelli are present on the lower side of the hind wing of this species, it can be commonly named the 'Garhwal Six Ring'.

#### ACKNOWLEDGEMENTS

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